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I N D E X

PLANT DISEASE NOTES.	Page.
Cereals and Grasses	22
Field and Fodder Crops	24
Vegetables	27
Fruit	29
Ornamentals	36
Miscellaneous plants	37
MISCELLANEOUS NOTES.	38
COMMONWEALTH MYCOLOGICAL INSTITUTE NOTES.	41

For private circulation to plant pathologists within Australia.

PLANT DISEASE NOTES.

CEREALS AND GRASSES.

GREY SPECK OF OATS:

Prior to this season, manganese deficiency of cultivated oats had not been recorded in New South Wales, although there is a record of its occurrence in wild oats at Parkes in 1928. During the past autumn, however, typical grey speck symptoms were observed in a cover crop of Algerian growing in an orchard near Sydney. In this orchard, in which the soil pH is 7.9, manganese deficiency had occurred previously in peaches, apricots and various weeds.

More recently, attention has been drawn to what appears to be grey speck of oats growing in calcareous soils of the gil-gai type in southern Riverina. Observations indicate that much of the so-called "patchiness" in oats on these soils may be associated with manganese deficiency and the Division of Plant Industry is conducting a trial at Yanco Experiment Farm to determine this point.

Department of Agriculture,
Sydney.

- F.C. BUTLER.

MASTIGOSPORIUM RUBRICOSUM ON GRASSES IN N.S.W:

Mastigosporium rubricosum (Dearn. and Barth.) Nannf. has been recorded for the first time in N.S.W., on Dactylis glomerata and Agrostis tenuis from Mt. Wilson. It causes a leaf spot disease which is quite severe during the cooler months.

Isolates of the fungus produced slow growing, leathery, amber-coloured colonies on P.D.A., with masses of conidia. Germination of spores differed from that described by Sprague (Diseases of Cereals and Grasses in North America, 1950), and differed slightly from that described by Bollard (Trans. Brit. Mycol. Soc. 33:250-264, : 265-275). Spores from culture, germinating in water on slides and on P.D.A., produced stout knobbly germ tubes from the centre cells, and occasionally from one or both end cells. Germ tubes were characteristically aerial, rising in most cases from the agar or water surface immediately after emergence.

N.S.W. Department of Agriculture
and University of Sydney.

- P.G. VALDER and
DOROTHY E. SHAW.

OCCURRENCE OF ERGOT AT DICKSON EXPERIMENT STATION DURING THE 1952-53 SEASON:

In December, 1952 a fairly severe infection of ergot was observed in rows of Wimmera Rye Grass and *Phalaris tuberosa*. Lines of the cross *Triticum-Agropyron* were also infected. This is the first time that ergot has been observed in seed heads of these grasses at the Experiment Station.

C.S.I.R.O.,
CANBERRA.

- E.M. HUTTON.

FIELD AND FODDER CROPS.

ANTHRACNOSE OF RED CLOVER:

During the late summer and autumn, reports were received of a die-back condition affecting well established red clover stands in the Singleton district. Specimens forwarded for examination were found to be affected by anthracnose (Colletotrichum trifolii), which has not been recorded previously in this State.

Infection was first observed following a period of wet, humid weather in December and January. The disease developed rapidly, and within 2-3 weeks of the first signs of infection, resulted in the virtually complete destruction of a number of well established, vigorously growing stands. In every instance, stands coming into their second year of growth were most seriously affected. Since red clover has long been regarded in New South Wales as a non-permanent pasture species which tends to decline during its second year, it is suggested that anthracnose, although not previously recorded, has been present for some years and that, to a degree, it has contributed annually to red clover decline in this State, without ever before developing on an extensive scale.

Infection of stems, petioles, petiolules, and leaflets has been observed. Leaflet infection occurred rarely but where present individual lesions were small, dark brown to black and oval or irregular in shape, with a tendency to concentrate about the leaflet margins. Stem and petiole infection was characterized by elongate, somewhat sunken, dark, occasionally zonate lesions, in the centre of which, clusters of dark setae and pinkish spore masses could frequently be seen under a hand lens. The most conspicuous field symptom of anthracnose attack is a dropping of leaflets and flower heads following infection of the petioles and flower-bearing stems. The leaflets then curl up and the plant assumes a generally wilted appearance. Finally affected plants become defoliated, the bare stalks turn brown and, in cases of severe infection, a crown rot condition develops. This is the most serious phase of the disease and crown-rotted plants usually die out completely or, when incompletely killed, produce infected new growth.

Overseas experience indicates that while red clover is attacked principally, sub., crimson and bokhara clovers and lucerne are also susceptible. The disease has not been recorded on white clover, and alsike clover is said to be practically immune. Outside the clover-medic group, additional hosts include lupin, vetch, broad bean, serradella, fenugreek and sainfoin. Arrangements are being made to test the reaction to anthracnose of various commercially grown and introduced

strains of red clover, and of several other leguminous species including lucerne, sub. clover and crimson clover.

Department of Agriculture,
Sydney. - F.C. BUTLER.

WITCHES' BROOM IN WHITE CLOVER AND PHALARIS TUBEROSA:

Witches' broom or a closely allied virus disease infected about 10% of the progenies of white clover being grown at the Dickson Experiment Station. All grades of reaction from mild to lethal were obtained, and this occurrence is no doubt related to the fact that the cross-pollinated white clover is a mixture of closely allied genotypes each of which reacts differently to the virus. This yellow group of viruses could become a limiting factor in the development of perennial legumes, particularly in sub-tropical areas where wide-spread occurrence of the disease has been noticed in a large range of legumes.

Some Phalaris tuberosa plants from the A.C.T., apparently affected with a witches' broom, were brought to my attention this season. The seed heads were replaced largely by leafy outgrowth. If a yellows virus became adapted to P. tuberosa it could become serious because of the strongly perennial nature of this grass.

C.S.I.R.O.,
Canberra. - E. M. HUTTON.

MOSAIC OF SUBTERRANEAN CLOVER:

During 1952 a fairly widespread infection of a virus allied to Bean Mosaic II (see also A.P.D.R.1:4:53, 1949) occurred in the subterranean clover plots at the Dickson Experiment Station. The infection was not severe enough to affect yields markedly except in rows of single plants. In numerous single plants it became obvious after flowing, the infected plants failing to set seed. The annual habit of this species ensures that potentially dangerous viruses of this nature do not build up in it.

C.S.I.R.O.,
Canberra. - E.M. HUTTON.

SOOTY BLOTCH OF RED CLOVER:

A leaf spot condition of red clover in the Guyra district has been identified as sooty blotch caused by Cymadothea trifolii (Mycologia 27: 58-73, 1935). This disease, which is characterized by dark brown to black, somewhat angular, slightly raised blotches occurring mainly on the under surfaces of the leaflets, has not been recorded previously in New South Wales.

Although alsike, crimson, red and white clovers are reported to be very liable to infection overseas, and the majority of Trifolium species are susceptible in varying degree, sooty blotch has been observed only on red clover in this State.

The Guyra specimens showed abundant development of the characteristically bicellular, light brown conidia and undulate conidiophores of the Polythrincium stage, but no evidence of the spermogonial or perithecial stages.

Department of Agriculture,
Sydney.

- F.C. BUTLER.

DAMPING OFF OF SUB. CLOVER SEEDLINGS:

A report was recently received of a damping off condition affecting small, circular patches of sub. clover seedlings in an improved pasture in the Cootamundra district. Individual seedlings showed rotting of the entire root system, which, in many instances, had detached from the hypocotyl at, or about ground level. Oogonia occurred abundantly in rotted root tissue from which Pythium ultimum was isolated. This represents the first occasion on which a species of Pythium has been associated with damping off in clovers in this State although several other members of the genus are known to be clover pathogens (Phytopathology 42: 245-249, 1952)

Department of Agriculture,
Sydney.

- F. C. BUTLER.

VEGETABLES.

BEAN SEED CERTIFICATION, 1952-1953:

During the 1952-1953 season in New South Wales, fifty-nine bean crops on 196 acres were passed for certification. It is estimated that the total yield of certified seed will be about 3,550 bushels, of which 1190 bushels (33.5%) will be Brown Beauty. Other varieties certified were Hawkesbury Wonder, Tweed Wonder, Wellington Wonder, Windsor Longpod, Goward's Special, and small quantities of Clarendon Wonder and Richmond Wonder. Sixty-one crops were rejected, fifty-two because of the presence of anthracnose, three for halo blight and six for other reasons.

On the South Coast this year, anthracnose was more severe than it has been for several years. Last year the disease was detected in three crops only. The hot, dry conditions of that season were unfavourable to the development of the disease and it is therefore possible that trace infection escaped detection. This could provide trace seed borne inoculum which, under the moist conditions of this season, could cause infection and subsequent severe disease development. However, there may be other methods of carry-over to explain this current outbreak in certified seed lines.

Department of Agriculture,
Sydney.

- J. WALKER.

ROOT KNOT OF LEEK:

During May, 1953, some specimens of leek (Allium porrum L.) showing stunting and yellowing were received from a market garden near Sydney. Some of the roots of these plants showed spindle shaped swellings which were little wider than the normal root and within which were numerous eelworms, mainly young females, having the general characteristics of the root knot eelworm, Heterodera marioni (Cornu) Goodey.

This occurrence of root knot on leek is the first record of the disease on a member of the genus Allium in New South Wales. Goodey (The Nematode Parasites of Plants catalogued under their hosts. Imp. Bur. Ag. Parasit. (Helminth) 1940) lists leek together with shallot, onion, welsh onion and garlic as being attacked by Heterodera marioni but, in the literature review given by Tyler (U.S.D.A. Misc.Pub.No.406, 1941), the general opinion is that, although these plants are sometimes invaded by the nematodes, they generally show good resistance and, even when invaded, are fairly tolerant.

In the present case, it is thought that infection was probably made possible by the heavy population of eelworms known to be present in the soil in this particular area. Young crucifer plants growing in adjacent ground were showing severe root galling and "hunger-root" production. It is thought that, under the normal growing conditions for leeks and other species of Allium in New South Wales, even though some root invasion may occur, losses due to root knot would be extremely slight because of the high natural resistance of Allium spp. and because their growing season coincides with the period of lowered eelworm activity.

Department of Agriculture,
Sydney.

- J. WALKER.

PHYTOPHTHORA ROOT ROT OF CAULIFLOWER:

During a recent survey of cauliflower crops in the Windsor-Pitt Town area, plants affected with Phytophthora root rot (P.megasperma Dresch) were found. Losses ranged from small patches in the lowest lying areas of individual crops to 100% in one case. The effects produced on the plants were similar to those described by Tompkins et. al.(J.Agric. Res.53: 9: 685-692, 1936).

It is considered that the attack by this fungus was favoured by a combination of two factors; firstly, the water-logging of the soil for a period of a week or more following flood rains in May, and secondly, the unusually warm weather which had been experienced through the autumn.

This is the first record of this disease in New South Wales.

Department of Agriculture,
Sydney.

- R. J. CONROY.

FRUIT.

FLORIDA GUMMOSIS:

About 30 years ago the Surprise Navel orange was imported from Florida by Mr.Benton of the Horticultural Division of the N.S.W. Dept. of Agriculture. Records show that it was grown in quarantine and trees were propagated and distributed to citrus growers in various parts of the state and to the South Australian Dept. of Agriculture and to a South Australian nurseryman. All trees of this variety so far traced in N.S.W. show symptoms identical with those described for Florida Gummosis, and also psorosis leaf patterns occur in the young growth.

Only in the Wentworth district has any evidence of spread of this disease been noted. This season 12 grapefruit in two orchards, five of them of known healthy ancestry, have shown the gummosis condition for the first time.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER.

BROWN SPOT OF EMPEROR MANDARIN:

This disease, the cause of which has not yet been determined, has been particularly active on Emperor manderins in coastal districts of N.S.W. during the last few seasons, causing loss of fruit and much dieback of young trees.

This season the following tangelos (mandarin x grapefruit hybrids) at the Gosford Citrus Research Station, Narara, were observed to show infection: Wekiwa, Orlando, Minneola, Seminole, Thornton, and Sampson. Trees of Minneola in particular were poor and stunted as the result of continued die-back of new growth. In addition rough lemon and Wheeny grapefruit showed characteristic lesions on young leaves. The Umatillo tangelo appeared to be resistant.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER.

SUDDEN DEATH OF CITRUS TREES:

During the past eight years reports have been received from all citrus growing areas in N.S.W. to the effect that occasional young vigorous trees on trifoliata stock have suddenly wilted and died. Affected trees always show one or two badly rotted roots, from which a brown discoloration has extended into and across the butt, cutting off the remainder of the roots. One affected tree was found in 1952 and another in February 1953 where collapse had not occurred and browning had not progressed completely through the butt from which it was possible to chisel out all browned tissue. In each case this treatment arrested the progress of the disease, and the trees, although deprived of more than half their root systems, have survived and appear healthy. This is highly suggestive that the condition is due to a wood-rotting pathogen, although attempts to isolate it have been unsuccessful.

The condition resembles very closely one illustrated as dry root rot by Klotz (California A.E.S. Circular 396) affecting what appear to be seville stocks.

The brown discolouration stops at the bud union, possibly indicating a degree of resistance by sweet orange. No similar collapse has so far been noted in trees on rough lemon stock, but should it occur it would probably be dismissed as Phytophthora root rot, without a critical examination.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER and
T. B. KIELY.

BLACK SPOT OF PEARS (VENTURIA PIRINA):

Some spectacular results were obtained last season in an orchard experiment for control of black spot of pears. Three spray schedules were used, all of which contained 6-4-40 Bordeaux at the "green tip" stage, (1) T.M.T.D. at "finger", "calyx" and 4 "covers", (2) 3-2-40 Bordeaux at "finger" followed by T.M.T.D. at "calyx" and "covers" and (3) 3-2-40 Bordeaux at "finger", followed by colloidal sulphur at "calyx" and "covers". The variety Glou Morceau was used.

Schedule 2 gave the best control of black spot. However, when fruit with more than 30% of the surface russeted was excluded, schedule 1 gave the best percentage yield of fancy grade fruit. The percentage yields of fancy grade fruit from treatment 1, 2 and 3 were respectively 88.1, 64.1 and 0.3. Schedule 3 caused such severe russet that almost no fruit were of fancy grade. The appearance of fruit which received

schedule 1 was excellent. Schedule 2 gave fruit a good appearance but russet was bad enough to reduce the yield of fancy fruit by about 30%.

All these results were highly significant.

Department of Agriculture,
Hobart. - J.R. WARD.

BACTERIAL CANKER OF STONE FRUITS:

During the spring of 1952 the incidence of bacterial canker (Psuedomonas syringae) was high, this being the third peak of incidence since records of this form of "gummosis" were commenced in 1943. Previous peaks occurred in 1943 and 1948. It is during years such as these that difficulty is experienced in establishing young plantings of cherry and apricot and, to a lesser extent, of peaches and plums.

Department of Agriculture,
Sydney. - K.E. HUTTON.

VINE EXPERIMENTS - INCIPIENT ZINC DEFICIENCY:

Three years ago an experiment was set up on old Gordo Blanco vines at Yanco Experiment Farm to investigate disease control with various fungicides and the effect of these on yield and foliage injury.

When these experiments were initiated black spot was prevalent. Bordeaux mixture 15.15.100 at early "budswell" and late "budburst" followed by 8.8.100 kept the black spot incidence at 0.23% and the average yield of the vines was 17.2 lb. The control plots showed 25.9% black spot and yielded at the rate of 9.0 lb. per vine.

In 1952 some tests were carried out introducing T.M.T.D. to Sultanas, which in previous years had been severely infected with black spot. Of the vines which were sprayed at "budswell", "budburst" and "1st foliage" with T.M.T.D. at 1½ lb. per 100 gallons 91% were clean and 9% had a trace to moderate infection. The recommended Bordeaux treatments of 15.15.100 at "budswell" and "budburst" and 8.8.100 at "1st foliage" only kept 18% of the vines free of black spot; 68% were moderately infected while 14% were severely infected. On the control plots 78% were severely infected and 22% moderately infected. This test indicated the superiority of T.M.T.D. over Bordeaux for the control of black spot on the more susceptible varieties.

In 1951/52, interest was focused on the yield response to zinc spray treatments even though there were no apparent zinc deficiency symptoms. Disease was absent for this year so the yield increase of 6.4 lb. per vine was attributed to the zinc spray. Continuing these experiments into the recent season some quite spectacular results were obtained from Zinc Bordeaux sprays applied as a fungicide.

TREATMENT		
Early budswell & late budburst	Four foliage sprays	Average yield per vine.
Bordeaux 15.15.100	Bordeaux 5.3½.100	25.3 lb.
Zinc Bordeaux 10.5.10.100	Zinc Bordeaux 10.2.7.100	32.3 lb.
Bordeaux 8.8.100	Bordeaux 8.8.100	24.5 lb.
Control - no fungicidal spray		21.2 lb.

The zinc sprayed plots showed an increase of 51.9% over the unsprayed. Allowing 14.15% of the increase as due to disease control (particularly downy mildew), there is still an increased yield of 37.75% or 8.1 lb. per vine, attributable entirely to zinc treatment. Furthermore there was a most obvious improvement in the size and fullness of bunches on the zinc sprayed plots. These results, coupled with other observations, suggest that incipient zinc deficiency may exist throughout a number of plantings on the M.I.A., particularly in the older vine and fruit areas.

This method of applying zinc as a fungicidal spray to vines is contrary to that which has been recommended in the past for correction of zinc deficiency. Further experimental work is planned to determine the critical zinc spray and to compare the results with those obtained from the orthodox zinc swabbing treatment immediately following pruning.

Department of Agriculture,
Leeton, N.S.W.

- J.R. MORSCHEL.

BLACK SPOT OF VINE CONTROL EXPERIMENTS:

The tables below set out results of tests in the mid-Murray area of Victoria in 1950 and 1952. In 1951 dry seasonal conditions did not favour the development of black spot.

These tables show that Ziram, Thiram and acid swab + Bordeaux have given good control of black spot.

Although acid swab + Bordeaux is effective, growers are switching over to Ziram and Thiram as these sprays are more easily mixed and applied.

The schedule used in these tests was as follows:-

In both years the winter treatments were applied three weeks before bud burst. In 1952 acid swab was the only winter treatment applied.

The first cover spray was applied at bud burst. Three more cover sprays were applied at fortnightly intervals after the bud burst spray.

This schedule proved to be satisfactory in the two seasons during which the tests were carried out, but if late spring rains occurred, another cover spray may be necessary.

Bud burst is defined as the stage at which 50% of the buds have burst.

Table 1.

1950 Tests.

Treatment		% Bunches Infested.
Winter	Spring	
1. Control	Unsprayed	95%
2. Acid swab(10% sulphuric acid)	Bordeaux	60%
3. Acid iron swab(10% sulphuric acid, 8% iron sulphate)	Bordeaux	47%
4. -	Bordeaux	52%
5. Thiram .3%	Thiram 0.15%	1%
6. Phenyl mercuric chloride (PMC) 0.3%	PMC 0.15%	69%

Difference for significance 5% 33.2
1% 44.6

Tables 2.

1952 Tests.

Treatment	% Bunches Infested
1. Control unsprayed	93%
2. 10% acid swab winter plus Bordeaux cover sprays	3.6%
3. Ziram 0.15% cover spray	0.4%
4. Thiram 0.15% cover spray	0.2%
5. Phenyl mercuric chloride 0.15% cover spray	19%
6. Phenyl mercuric fixtan cover spray	29.6%
Difference for significance 5% 7.38 1% 9.95	

The fungicides used were formulated products and the concentrations quoted refer to them.

Department of Agriculture,
Melbourne. - R. H. TAYLOR.

A DISEASE IN WILLIAMS HYBRID BANANAS PRODUCED BY FUSARIUM SP:

In August, 1950, there appeared in a banana plantation in the Beenleigh district three Williams Hybrid plants showing symptoms similar to those produced by Panama disease in susceptible varieties. As the Williams Hybrid is a sport from the Cavendish, a variety immune to Panama disease, this occurrence was a matter of some interest.

The leaves of the affected plants were dying back from the tips but the typical yellow colour was absent. Slight cracks were present in the leaf sheaths at the base of the plants. Dark streaks were visible from the outside of the pseudostem and when examined internally were found to be brown "soggy" areas similar to those commonly associated with Panama disease. Many of the vascular strands in the corm tissue exhibited the reddish brown colour typical of this disease.

A Fusarium differing from F. oxysporum f. cubense (E.F.S.) in the colour produced on rice and P.D.A. media was isolated from the diseased tissue.

In a pathogenicity test this fungus proved capable of attacking both the Williams Hybrid and Lady Finger varieties. Affected plants became stunted and exhibited the vascular discoloration seen in the field condition. The Cavendish variety was not affected.

F. oxysporum f. cubense was included in the pathogenicity trial but produced symptoms only in the Panama susceptible Lady Finger variety.

The disease in Williams Hybrid has not recurred in the field.

Department of Agriculture,
Brisbane. - G. S. PURSS.

CERCOSPORA FRUIT & LEAF SPOT OF OLIVE:

Olive specimens received during the autumn from the Sydney Metropolitan Area showed sunken purplish spots on the fruit and inconspicuous darkened areas on the lower surface of the leaves. The fruits were severely disfigured and distored while the leaves were little affected. Spores of a Cercospora sp. were abundant on the lesions and the organism appears to be C. cladosporioides, which was originally recorded by Saccardo on olive leaves from Algeria and from Italy, where the disease is quite prevalent and is known as silver leaf. There appears, however, to be only one published record of the occurrence of this fungus on olive fruits. Hansen and Rawlins (Phytopathology, 34: 257-259, 1944) recorded the disease on leaves and fruit in California, stating that affected fruits were unsuitable for pickling as green olives but, when pickled as ripe olives, the flavour, colour and texture were unimpaired. The damage to the local specimens, however, was such that it is doubtful whether they would have made a satisfactory pickled product.

Department of Agriculture,
Sydney. - P. G. VALDER.

ORNAMENTALS.

OCCURRENCE OF ANTIRRHINUM RUST IN A.C.T:

Antirrhinum rust is now well established in Canberra, samples having been received from a number of widely separated localities.

C.S.I.R.O.,
Canberra.

- E.M. HUTTON.

MISCELLANEOUS PLANTS.

ANTHRACNOSE OF DIGITALIS:

Colletotrichum fuscum appeared for the first time in N.S.W. in May 1953 in an experimental planting of *Digitalis lanata* (c.f. A.P.D.R. 4:3:37-38, 1952). Seedlings grown under warm and humid conditions suffered severe leaf injury, and could not be used for planting out. The seed which had been imported from British Columbia had been dusted with agrosan before sowing.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER.

MISCELLANEOUS NOTES.

FIELD COLLECTION OF PHYTOPHTHORA INFESTANS (MONT)D.BY:

During investigations of late blight of potatoes it was necessary to obtain isolates of the pathogen from the widely scattered potato growing areas of Eastern Australia. Due to the long distances involved, and delays in transit the usual methods of forwarding field infected material were not successful. Many specimens received were either dried out and the organism killed, or secondary rotting was so serious that it was impossible to re-isolate the pathogen.

These difficulties were overcome by using the following collecting techniques. All material was forwarded by air.

(a) Where the infestation was slight the above ground parts of infected plants were collected and wrapped in several layers of damp, absorbent paper prior to packing. During transit some of the healthy foliage became infected and isolation was possible from infected but not completely rotted foliage.

(b) Where infestation was heavy and serious rotting of the whole sample was a possibility a modification of the tuber method of culture maintenance was used. Sound small tubers were washed and a plug of tissue $\frac{3}{4}$ in. in diameter and $\frac{3}{4}$ in. deep was removed from the stem end. Several pieces of infected leaf, $\frac{1}{4}$ in. square, and showing mycelium on the undersurface, were placed in the cavity and the plug replaced and held firmly with adhesive tape. Vaseline was smeared over the cut surface to prevent drying out. Each tuber was then wrapped in grease proof paper and layers of moist absorbent paper. The pathogen was re-isolated from infected tuber tissue.

Using these methods the pathogen was successfully isolated from material collected in the field at distances of up to 800 miles from the laboratories and failures were reduced to a minimum.

Prepared from laboratory notes of the late Dr. W. V. Ludbrook.

C.S.I.R.O.,
Canberra.

J. H. E. MACKAY.

MOULD GROWTH ON SORGHUM SEED:

Many seed samples harvested from the 1952-53 sorghum crop in Southern Queensland developed considerable mould growth during germination tests, which seriously hampered the work of the seed testing laboratory.

The following species of fungi were isolated from the seed samples:- Alternaria spp., Aspergillus sp., Rhizopus sp., Heterosporium sp., Helminthosporium sp., and Fusarium sp.

Three species of Alternaria predominated and surface sterilisation with 1:1000 mercuric chloride, followed by washing failed to elimate their growth. Subsequent fungicidal tests showed that Fernasan and Tetroc at the rate of 1 oz./ bushel were both extremely effective in preventing mould development. Agrosan at 2 oz./ bushel was fairly effective, while $CuCO_3$ was of little value.

It was found that the mould was exerting very little effect on total germination percentage in testing trays. In the fungicidal tests, however, it was revealed that where a fungicide was effectively controlling the mould growth, germination percentage in sterile soil was slightly increased.

Department of Agriculture,
Brisbane. - G. S. PURSS.

MICROBIOLOGICAL WORK AT C.S.I.R.O.

DIVISION OF PLANT INDUSTRY:

During recent months the Division has been building up a team of soil microbiologists and is now concerned with various aspects of soil and legume microbiology in addition to plant pathology.

Dr. P.S. Nutman, whose Rhizobium work at Rothamsted is widely known, arrived in Australia on 25th June to take up a Senior Research Fellowship for 3 years and will work on the physiology of nodulation of legumes.

Dr. S.M. Bromfield has recently returned from two years at Rothamsted on a C.S.I.R.O. studentship and will undertake a study of phosphate availability as affected by soil microflora.

Mr. F. Hely also has returned recently from a two year tour of duty overseas during which he worked at Madison, Wisconsin and Gembloux, Belgium. He will be concerned with studies of the changes in soil microflora with build up of fertility under sub. clover pasture.

The plant pathology team will be strengthened also when Dr. K.O. Muller arrives late in July to continue studies commenced while Professor of Pathology at Berlin and later transferred to the National Institute of Agricultural Botany, Cambridge. He will be concerned with fundamental studies of host-pathogen relationships, with particular emphasis on the mechanism of resistance.

C.S.I.R.O.,
Canberra.

- J.H.E. MACKAY.

COMMONWEALTH MYCOLOGICAL INSTITUTE NOTES.

PROGRESS WITH NEW BUILDINGS FOR INSTITUTE:

The Government of New Zealand has now approved the proposal that it should meet its share of the loan of £55,000 and has indicated that it preferred its proportion to be paid as a lump sum. This means that, up-to-date, the Governments of the United Kingdom and Northern Ireland, Australia, New Zealand, Southern Rhodesia and Ceylon have approved the proposals for financing the new building for the Institute.

VACANCY FOR PLANT PATHOLOGIST AT C.M.I:

Applications are invited for a plant pathologist to work at C.M.I. Salary is in the range £600 (sterling) by annual increments of £30 to £960 (with a bar at £660 and an efficiency bar at £900) then by £40 to £1,200 and by £50 to £1350. There is also a pay addition that runs from £55 at £600 to £85 at £1,350. Age, qualifications and experience will be considered when fixing the starting salary. The appointment can be terminated at three months' notice on either side.

The principal requirement is a wide knowledge of plant pathology, preferably with tropical experience. The successful candidate can be detailed to any colonial territory to undertake any comparatively short-term investigation. When not engaged overseas, plant pathological or taxonomic work will be done at the Institute.

When serving abroad the plant pathologist will receive, in addition to basic salary, an overseas research allowance appropriate to the territory in which he or she is serving. This allowance will be abated, in some cases, by the amount of pay addition.

If an overseas candidate is successful, an allowance will be made towards the cost of travelling expenses when proceeding to the United Kingdom on appointment.

Further details may be had from, and applications forwarded to, the Secretary, C.A.B., Farnham House, Farnham Royal, Bucks., England. Closing date is 15th September, 1953. Government employees should apply through their Governments.

Department of Agriculture,
Sydney.

- C. J. MAGEE.